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**Chu**

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(54) **SOUND DATA OUTPUT AND  
MANIPULATION USING HAPTIC  
FEEDBACK**

(75) Inventor: **Lonny L. Chu**, Sunnyvale, CA (US)

(73) Assignee: **Immersion Corporation**, San Jose, CA  
(US)

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345/163

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*Primary Examiner*—Jeffrey Donels

(57) **ABSTRACT**

Sound data output and manipulation with haptic feedback.  
Haptic sensations are associated with sound data to assist in  
navigating through and editing the sound data. The sound  
data is loaded into computer memory and played such that  
sound is output from an audio device. The sound playing is  
controlled by user input for navigation through the sound  
data. Haptic commands are generated based on the sound  
data and are used to output haptic sensations to the user by  
a haptic feedback device manipulated by the user. The haptic  
sensations correspond to one or more characteristics of the  
sound data to assist the user in discerning features of the  
sound data during the navigation through and editing of the  
sound data.

**29 Claims, 11 Drawing Sheets**

